

## WHAT IS CLAIMED IS:

1. A method for decoding a variable length TFCI (Transport Format Combination Indicator) bits for a DSCH (Downlink Shared Channel) or  
 5 for a DCH (Dedicated Channel) in a reception device for a mobile communication system, which receives a signal of encoded TFCI bits for the DSCH or the TFCI bits for the DCH, encoded with orthogonal codes, comprising the steps of:
  - determining inverse fast Hadamard transform (IFHT) stages based on the  
 10 length of the TFCI bits;
  - inserting "0"s in the received signal at a predetermined positions to form a zero-inserted signal;
  - sequentially performing inverse fast Hadamard transform on the zero-inserted signal up to the determined IFHT stages; and
  - 15 after completion of the inverse fast Hadamard transform by the determined IFHT stages, outputting index of an orthogonal code of which correlation value is most large than other correlation value achieved by the determined IFHT stage as decoded TFCI bits.
- 20 2. The method as claimed in claim 1, wherein the each of the determined IFHT stages  $n$  are a least value satisfying ( $a \leq 2^n$ ) for a code length "a".
3. The method as claimed in claim 2, wherein the determined IFHT  
 25 stage  $n$  is one of 1, 2, 3, 4 and 5.
4. The method as claimed in claim 1, wherein the length of the zero-inserted signal is identical to a length of the orthogonal codes used for encoding the TFCI bits.

5. An apparatus for decoding a variable length TFCI bits for a DSCH or for a DCH in a reception device for a mobile communication system, which receives a signal of encoded TFCI bits for the DSCH or the TFCI bits for the DCH, encoded with orthogonal codes, the apparatus comprising:

a controller for informing a code length information and zero inserting positions to an inserter;

wherein the inserter inserts "0"s in the received signal at the zero inserting position to form a zero-inserted signal;

- 10 a inverse fast Hadamard transformer (IFHT) having multiple operating stages, for calculate correlation values of the zero-inserted signal with the orthogonal codes

wherein, the IFHT stop performing inverse fast Hadamard transform at a given operating stage correspond to the code length information; and

- 15 a comparator for comparing the correlation values and outputting a Walsh index correspond to the highest correlation value.

6. The apparatus as claimed in claim 5, wherein each of the given IFHT stages  $n$  are a least value satisfying ( $a \leq 2^n$ ) for the code length "a".

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7. The apparatus as claimed in claim 5, wherein the given stage is one of 1, 2, 3, 4 and 5.

8. The apparatus as claimed in claim 5, wherein the length of the zero-inserted signal is identical to a length of an orthogonal code used for encoding the TFCI bits.
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